Innovations in Language Education and Literature
Vol. 3, No. 1, 2026, pp. 33-42
ISSN: 3062-8962 (Print), 3062-8946 (Online)
DOI: https://doi.org/10.31605/ilere.v3i1.6773

Game-Based Vocabulary Learning: The Effectiveness of Spelling Bee in EFL Instruction

Muh. Tedy Firansyah, Adi Isma*, Ahyadi Ahyadi

Universitas Sulawesi Barat, Indonesia

**Corresponding Author: adi.isma@unsulbar.ac.id*

ARTICLE INFO

Received: 2026-03-29
Revised: 2026-05-27
Accepted: 2026-06-13

Keywords: EFL Instruction; Game-Based Learning; Learning Interest; Spelling Bee Games; Vocabulary Mastery

ABSTRACT

Vocabulary acquisition remains a persistent challenge in EFL classrooms, particularly where students have minimal exposure to English outside school. Conventional instructional methods often fail to sustain motivation or produce meaningful vocabulary gains. This study examines the effectiveness of the Spelling Bee Game as a game-based vocabulary learning strategy among eighth-grade students at SMPN 4 Pamboang, West Sulawesi, Indonesia. A quasi-experimental pre-test and post-test control group design was employed, involving 39 students divided into an experimental class (n=19) and a control class (n=20). The experimental group received vocabulary instruction through three Spelling Bee variations, while the control group followed conventional methods. Data were gathered through vocabulary tests and a Likert-scale questionnaire measuring learning interest. Results showed that the experimental group's mean score rose substantially from 46.6 to 79.5, compared to a modest gain from 47.25 to 66.5 in the control group. An independent sample t-test confirmed a statistically significant difference (Sig. = 0.000). The questionnaire yielded an overall average of 86.2%, classified as Excellent, indicating strong student interest in the approach. These findings suggest that Spelling Bee Game offers a viable and engaging alternative to conventional vocabulary instruction in low-exposure EFL settings.

Citation (APA): Firansyah, M. T., Isma, A., & Ahyadi, A. (2026). Game-Based Vocabulary Learning: The Effectiveness of Spelling Bee in EFL Instruction. *Innovations in Language Education and Literature*, *3*(1), 33-42.

INTRODUCTION

Vocabulary is widely regarded as the cornerstone of language acquisition. Without a sufficient repertoire of words, learners struggle to participate meaningfully in reading, writing, listening, and speaking activities, regardless of how well they understand grammatical rules (Vnucko & Klimova, 2023). In English as a Foreign Language (EFL) contexts, this challenge is particularly pronounced: students are expected to acquire a working vocabulary in a language they rarely encounter outside the classroom, with limited opportunities for incidental learning through daily exposure. Under such conditions, the quality of classroom instruction becomes the primary and sometimes the only driver of vocabulary development.

Despite widespread recognition of vocabulary's importance, conventional instructional approaches in many EFL classrooms remain heavily reliant on rote memorisation, dictionary look-up, and teacher-led board activities (Zhang & Hasim, 2023). These methods tend to position students as passive recipients of word lists, offering little room for meaningful interaction with new vocabulary. The consequences are predictable: students memorise words for a test and forget them shortly after, motivation declines, and vocabulary knowledge remains shallow and difficult to transfer to real communicative situations. Yang et al. (2024) further note that passive, repetitive vocabulary tasks frequently heighten foreign language anxiety, creating an affective barrier that compounds the cognitive challenge of word retention.

The search for more effective alternatives has led researchers and practitioners toward game-based learning as a promising instructional paradigm. Games, by their nature, create conditions that conventional methods rarely achieve: they engage learners actively, provide immediate feedback, lower anxiety through an enjoyable atmosphere, and generate repeated, contextualised encounters with target language forms (Susaniari & Santosa, 2024). A growing body of empirical evidence supports these claims. Ahmed et al. (2022) found that game-based vocabulary instruction produced significantly higher recall and retention scores compared to

traditional approaches among EFL learners. Similarly, Amzalag et al. (2024) demonstrated that digital game-based learning substantially improved both academic achievement and engagement among middle school students, suggesting that the benefits extend beyond vocabulary to broader learning outcomes.

Among the various game-based strategies available to EFL teachers, the Spelling Bee Game occupies a distinctive position. Unlike purely digital game platforms, the Spelling Bee is accessible, low-cost, and readily adaptable to diverse classroom conditions without requiring technological infrastructure. It engages students in the active production of target vocabulary, spelling, pronouncing, and contextualising words, within a structured, competitive, yet socially engaging format (Seregar & YB, 2024). These characteristics make it particularly well-suited to under-resourced EFL settings, where access to digital devices and stable internet connections cannot be assumed.

The present study was conducted at SMPN 4 Pamboang, a state junior high school in Majene Regency, West Sulawesi Province, Indonesia. This setting is representative of a wider category of EFL contexts in Indonesia in which local vernacular languages, in this case, Mandar, dominate daily communication, and students' exposure to English is largely confined to scheduled classroom hours (Isma et al., 2022). Preliminary observations and teacher interviews at the school confirmed three interconnected problems: students demonstrated limited vocabulary mastery and struggled to retain even basic English words; motivation and active participation during vocabulary lessons were consistently low; and instructional methods remained predominantly conventional, offering little variation or student engagement. These conditions reflect a broader pattern documented across Indonesian EFL classrooms and point to a genuine need for instructional alternatives that can work within local constraints (Rasmin et al., 2024).

While several studies have examined the Spelling Bee Game in EFL and second language contexts, the existing literature is limited in two important respects. First, most previous implementations have relied on a single game format, typically the Classic Spelling Bee, without exploring how different variations of the game might address different dimensions of vocabulary learning and engage different learner profiles (Seregar & YB, 2024). Second, the majority of published studies have been conducted with students who already possess some degree of functional familiarity with English in their daily environments, leaving the effectiveness of the approach in genuinely low-exposure contexts largely unexplored. The present study addresses both limitations by implementing three pedagogically distinct variations of the Spelling Bee Game; Classic, Team, and Visual, as an integrated instructional intervention in a context where English use outside the classroom is minimal.

This study is guided by two research questions: (1) How effective is the Spelling Bee Game in enhancing the vocabulary mastery of eighth-grade students at SMPN 4 Pamboang? (2) How is the students' interest in learning vocabulary through the Spelling Bee Game?

METHOD

Research Design

This study employed a quantitative approach within a quasi-experimental framework, using a pre-test and post-test control group design. In this design, both the experimental and control groups were assessed before and after the instructional intervention, enabling a systematic comparison of vocabulary outcomes between the two conditions. A quasi-experimental design was selected rather than a true experimental design because the study was conducted with intact classroom groups, a common and practical constraint in school-based research where individual random assignment of students to conditions is neither logistically feasible nor educationally appropriate (Guo et al., 2024). This design choice is acknowledged as a limitation on causal inference and is addressed transparently in the Discussion section.

The general structure of the design follows the notation below:

EG : O_1 X_1 O_2

CG : O_1 X_2 O_2

Where EG denotes the experimental group, CG the control group, O_1 the pre-test, O_2 the post-test, X_1 the Spelling Bee Game intervention, and X_2 conventional vocabulary instruction.

Research Setting and Participants

The study was conducted at SMPN 4 Pamboang, located in Simbang Village, Pamboang District, Majene Regency, West Sulawesi Province, Indonesia, between July and August 2025. This school was selected as the research site on the basis of the vocabulary learning challenges identified during preliminary observations,

including low student motivation, limited vocabulary mastery, and an instructional environment characterised by conventional, teacher-centred methods, conditions representative of many EFL classrooms in rural and semi-urban Indonesia (Isma et al., 2022).

The study population comprised all eighth-grade students at SMPN 4 Pamboang (N = 39). Participants were assigned to groups using cluster sampling, in which intact classes rather than individual students served as the sampling units, a procedure consistent with the quasi-experimental design and widely used in classroom-based EFL research (Fahmi et al., 2024). Class VIII B (n = 19; 7 male, 12 female) was designated as the experimental group, and Class VIII A (n = 20; 6 male, 14 female) served as the control group. Pre-test scores confirmed that both groups entered the study at comparable levels of vocabulary proficiency, with mean scores of 46.6 and 47.25 respectively, indicating no significant pre-existing difference between the groups.

Instructional Intervention

The experimental group received vocabulary instruction through the Spelling Bee Game across four treatment sessions, each targeting a distinct vocabulary category and employing a specific game variation. The control group received equivalent vocabulary content through conventional instruction, comprising teacher-led explanation, vocabulary lists, and written exercises, methods typical of existing practice at the school.

The four treatment sessions were structured as follows:

1. Classic Spelling Bee (Nouns). The researcher introduced the rules and mechanics of the Spelling Bee Game, after which individual students took turns spelling school-related noun vocabulary aloud before the class. This format prioritised individual accountability and public vocabulary production, building personal confidence and activating retrieval under mild competitive conditions.
2. Team Spelling Bee (Verbs). Students were divided into small groups and competed collectively, with team members collaborating to spell target action verbs. This variation introduced cooperative interdependence into the competitive structure, creating conditions in which individual effort contributed to collective outcomes, an arrangement consistent with the cooperative learning principles documented by Bećirović et al. (2022) as effective for motivation and achievement in EFL contexts.
3. Visual Spelling Bee (Adjectives). Students were presented with images and flashcards depicting target adjectives and asked to identify, pronounce, and spell the corresponding vocabulary items. This format engaged dual-coding mechanisms by pairing orthographic word forms with visual referents, thereby strengthening encoding depth and facilitating subsequent retrieval (Luo, 2022). Students were given a ten-minute individual review period before the competitive session commenced.
4. Mixed Spelling Bee (Adverbs). The final session combined Classic and Team formats in a consolidation activity targeting adverb vocabulary. Students participated in both individual and group spelling tasks within a single session, reviewing and applying vocabulary acquired across all previous sessions.

Each session followed a consistent three-phase structure: vocabulary introduction and review, game activity, and post-game reflection. Treatment was conducted over a six-week period in coordination with the school's academic calendar.

Research Instruments

Two instruments were used to collect data in this study: a vocabulary test and a learning interest questionnaire.

1. Vocabulary Test: A 20-item multiple-choice vocabulary test was constructed and administered as both pre-test and post-test. Items were distributed equally across four vocabulary categories: nouns (items 1–5), verbs (items 6–10), adjectives (items 11–15), and adverbs (items 16–20). The pre-test and post-test shared the same structure and assessed the same vocabulary categories but used different lexical items and contextual frames to minimise practice effects. Student scores were calculated using the following formula: Score = (Number of Correct Answers / Total Items) × 100
2. Learning Interest Questionnaire: A 15-item Likert-scale questionnaire (1 = Strongly Disagree to 5 = Strongly Agree) was administered exclusively to the experimental group following the post-test, in order to assess students' perceptions of and interest in vocabulary learning through the Spelling Bee Game. Items were constructed around five theoretical indicators: (1) vocabulary understanding and mastery, (2) spelling confidence and ability, (3) interest and attitude toward vocabulary learning, (4) learning challenges encountered during the game, and (5) suitability of the method and willingness to

continue using it. Both positively and negatively worded items were included to reduce response bias. The questionnaire was administered only to the experimental group, as its purpose was to capture student experience of the Spelling Bee intervention specifically, an instrument administered to students who had not participated in the intervention would not yield meaningful or comparable data (Li & Li, 2022).

Data Analysis

Data from the vocabulary tests were analysed through several sequential procedures.

1. Descriptive statistics, including mean, median, mode, and standard deviation, were computed for both groups at pre-test and post-test to characterise score distributions and identify initial trends.
2. Student scores were classified according to a seven-tier performance rubric (Very Poor to Excellent) to provide a fine-grained picture of achievement distribution across both groups and time points.
3. The normalised gain (N-Gain) score was calculated for each student and group to measure the magnitude of learning improvement relative to the maximum possible gain from the pre-test score. The N-Gain formula and three-category classification — Low ($g < 0.3$), Medium ($0.3 \leq g < 0.7$), and High ($g \geq 0.7$) — follow Hake (1998), the standard and widely cited framework for gain score analysis in educational research. This classification was applied consistently to both the experimental and control groups. N-Gain = (Post-test Score − Pre-test Score) / (Maximum Score − Pre-test Score)
4. Before conducting hypothesis testing, two prerequisite tests were performed to verify the assumptions of parametric analysis: the Shapiro-Wilk test for normality (appropriate for samples of fewer than 50) and Levene's test for homogeneity of variance. A significance value of $p > 0.05$ in both tests was required to proceed with parametric testing.
5. Hypothesis testing was carried out using an independent sample t-test at a significance level of $\alpha = 0.05$, processed with IBM SPSS Statistics version 27. The null hypothesis (H_0) stated that there is no significant difference in vocabulary mastery between students taught through the Spelling Bee Game and those taught through conventional methods. The alternative hypothesis (H_1) stated that a significant difference does exist. H_0 was to be rejected if the obtained Sig. (2-tailed) value fell below 0.05.
6. Questionnaire data were analysed by computing a percentage score for each indicator and for the instrument overall, using the formula: Percentage = (Total Obtained Score / Total Ideal Score) × 100. Results were then classified according to the following success categories: Excellent (85–100%), Good (70–84%), Fair (55–69%), Poor (40–54%), and Very Poor (below 40%). All statistical analyses were conducted using IBM SPSS Statistics version 27.

RESULTS

This section presents the findings of the study in four sequential parts: descriptive statistics of pre-test and post-test scores, achievement distribution and KKM attainment, N-Gain analysis, and the results of prerequisite and hypothesis tests. Questionnaire findings addressing students' learning interest are presented in the final subsection.

Descriptive Statistics

Table 1 presents the descriptive statistics for both the experimental and control groups across the pre-test and post-test.

Table 1. Descriptive Statistics of Pre-test and Post-test Scores

Statistics	Experimental Pre-test	Experimental Post-test	Control Pre-test	Control Post-test
N	19	19	20	20
Mean	46.60	79.50	47.25	66.50
Median	50.00	80.00	47.50	67.50
Mode	50.00	90.00	55.00	70.00
Std. Deviation	20.00	11.00	12.51	11.25
Minimum	15.00	60.00	30.00	45.00
Maximum	85.00	95.00	75.00	85.00

Prior to the intervention, both groups demonstrated comparable and relatively low vocabulary proficiency. The experimental group recorded a pre-test mean of 46.60 (SD = 20.00), while the control group returned a mean of 47.25 (SD = 12.51) — a negligible difference that confirmed the two groups were reasonably well-matched at baseline. Following the instructional period, the experimental group's mean score rose to 79.50 (SD = 11.00), representing a gain of 32.90 points. The control group also improved, reaching a post-test mean of 66.50 (SD = 11.25), a gain of 19.25 points. Beyond the difference in mean gains, the decrease in standard deviation within the experimental group — from 20.00 at pre-test to 11.00 at post-test — indicates that the Spelling Bee intervention not only raised average performance but also reduced score dispersion, suggesting a more equitable distribution of learning gains across students of varying initial proficiency.

Score Classification and KKM Attainment

Table 2 presents the distribution of students across seven performance categories at pre-test and post-test for both groups.

Table 2. Score Classification Distribution: Experimental and Control Groups

Category	Score Range	EG Pre-test	EG Post-test	CG Pre-test	CG Post-test
Excellent	96–100	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Very Good	86–95	0 (0%)	6 (31.6%)	0 (0%)	0 (0%)
Good	76–85	1 (5.3%)	8 (42.1%)	1 (5.0%)	3 (15.0%)
Fairly Good	66–75	3 (15.8%)	4 (21.1%)	1 (5.0%)	8 (40.0%)
Fair	56–65	3 (15.8%)	1 (5.3%)	3 (15.0%)	6 (30.0%)
Poor	46–55	5 (26.3%)	0 (0%)	7 (35.0%)	2 (10.0%)
Very Poor	0–45	7 (36.8%)	0 (0%)	8 (40.0%)	1 (5.0%)
Total		19 (100%)	19 (100%)	20 (100%)	20 (100%)

At pre-test, the experimental group was heavily concentrated in the lower performance bands: 36.8% of students fell in the Very Poor category and a further 26.3% in the Poor category, meaning that nearly two-thirds of the class entered the study with vocabulary scores below 55. Only one student (5.3%) reached the Good category, and none reached Very Good or Excellent. The control group presented a broadly similar picture, with 40.0% in Very Poor and 35.0% in Poor at pre-test.

The post-test distributions tell a markedly different story for the two groups. In the experimental group, the Very Poor and Poor categories were entirely eliminated: no student remained below a score of 60. The majority of students moved into the upper performance bands, with 42.1% reaching Good (76–85) and 31.6% Very Good (86–95). A further 21.1% achieved Fairly Good (66–75), and only one student (5.3%) remained in the Fair category. In the control group, improvement was evident but considerably more modest: while the proportion of students in the two lowest categories declined, most students advanced only into the Fairly Good (40.0%) and Fair (30.0%) bands, with 15.0% reaching Good. No control group student reached the Very Good or Excellent categories.

Regarding attainment of the Minimum Mastery Criterion (KKM = 69), Table 3 summarises the proportion of students meeting this threshold at each time point.

Table 3. KKM Attainment: Experimental and Control Groups

Group	Pre-test Passing (≥69)	Pre-test Not Passing	Post-test Passing (≥69)	Post-test Not Passing
Experimental	5 (26.3%)	14 (73.7%)	16 (84.2%)	3 (15.8%)
Control	2 (10.0%)	18 (90.0%)	7 (35.0%)	13 (65.0%)

In the experimental group, the number of students meeting the KKM increased from 5 (26.3%) at pre-test to 16 (84.2%) at post-test — a rise of 57.9 percentage points. The control group improved from 2 students (10.0%) to 7 students (35.0%), an increase of 25.0 percentage points. Despite both groups beginning at comparably low levels, the experimental group's post-test KKM attainment rate was more than double that of the control group, underscoring the practical significance of the Spelling Bee intervention beyond its statistical effect.

N-Gain Analysis

The normalised gain (N-Gain) was calculated for each student to assess the magnitude of learning improvement relative to the maximum possible gain from each student's pre-test score, following the formula and three-category classification established by Hake (1998): Low ($g < 0.30$), Medium ($0.30 \leq g < 0.70$), and High ($g \geq 0.70$). Table 4 presents the N-Gain distribution for both groups.

Table 4. N-Gain Score Distribution: Experimental and Control Groups

N-Gain Category	Coefficient	Experimental Group	Control Group
High	$g \geq 0.70$	5 (26.3%)	2 (10.0%)
Medium	$0.30 \leq g < 0.70$	14 (73.7%)	12 (60.0%)
Low	$g < 0.30$	0 (0%)	6 (30.0%)
Mean N-Gain		0.63	0.37
Classical Completeness		97.35%	52.50%

In the experimental group, no student fell into the Low N-Gain category — a finding that indicates the Spelling Bee intervention produced at least a moderate learning gain for every participant, regardless of initial proficiency level. The majority of experimental students (73.7%) achieved Medium N-Gain scores, and 26.3% reached the High category. The group's mean N-Gain of 0.63 places it solidly within the Medium range under Hake's (1998) classification, approaching the upper boundary of that band.

The control group presented a more heterogeneous picture: while 60.0% of students achieved Medium N-Gain scores and 10.0% reached High, 30.0% remained in the Low category — meaning that nearly one-third of control group students experienced only minimal improvement relative to their starting points despite receiving regular instruction. The control group's mean N-Gain of 0.37, though technically within the Medium band under Hake's (1998) classification, sits considerably closer to the Low boundary than the experimental group's mean. The gap between the two groups' mean N-Gain values (0.63 versus 0.37) and classical completeness rates (97.35% versus 52.50%) provides a clear indication of the differential effectiveness of the two instructional approaches.

Prerequisite Tests and Hypothesis Testing

Before proceeding to hypothesis testing, two prerequisite tests were conducted to verify the assumptions underlying the use of parametric statistics.

Normality Test

The Shapiro-Wilk test was applied to the pre-test, post-test, and N-Gain scores of both groups, given that all sample sizes were below 50. Results are presented in Table 5.

Table 5. Shapiro-Wilk Normality Test Results

Data	Group	Statistic	df	Sig.	Decision
Pre-test	Experimental	.954	20	.465	Normal
Pre-test	Control	.962	20	.581	Normal
Post-test	Experimental	.902	19	.053	Normal
Post-test	Control	.931	19	.158	Normal
N-Gain	Experimental	.973	19	.826	Normal
N-Gain	Control	.953	20	.414	Normal

All Shapiro-Wilk significance values exceeded the threshold of 0.05, confirming that the score distributions for both groups at all time points met the assumption of normality.

Homogeneity Test

Levene's test for equality of variances was applied to the N-Gain scores of both groups. The test yielded a significance value of .072 ($F = 3.439$, $df_1 = 1$, $df_2 = 37$), exceeding the 0.05 threshold and confirming that the variance assumption was satisfied. Together, the normality and homogeneity results validated the use of the independent sample t-test for hypothesis testing.

Hypothesis Testing

An independent sample t-test was conducted on the N-Gain scores of both groups at a significance level of $\alpha = 0.05$. Results are presented in Table 6.

Table 6. Independent Sample T-Test Results

	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	3.439	.072	−5.769	37	.000
Equal variances not assumed			−5.841	31.264	.000

The independent sample t-test returned a Sig. (2-tailed) value of .000, well below the $\alpha = 0.05$ threshold. Accordingly, the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted. This result indicates that there is a statistically significant difference in vocabulary mastery gains between students who received instruction through the Spelling Bee Game and those who received conventional instruction, with the experimental group demonstrating substantially greater improvement.

Students' Learning Interest

Following the post-test, the 15-item Likert-scale questionnaire was administered to the 19 students in the experimental group to assess their interest in vocabulary learning through the Spelling Bee Game. Table 7 presents the results by indicator.

Table 7. Questionnaire Results by Indicator of Learning Interest

No.	Indicator	Average (%)	Category
1	Vocabulary Understanding and Mastery	88.4%	Excellent
2	Spelling Confidence and Ability	86.3%	Excellent
3	Interest and Attitude toward Vocabulary Learning	91.6%	Excellent
4	Learning Challenges with Spelling Bee	82.5%	Good
5	Suitability and Willingness to Continue	92.1%	Excellent
	Overall Average	86.2%	Excellent

The overall average of 86.2% places students' collective response in the Excellent category. Four of the five indicators reached the Excellent band, with only the Learning Challenges indicator falling slightly below at 82.5% (Good). The two highest-scoring indicators, Suitability and Willingness to Continue (92.1%) and Interest and Attitude toward Vocabulary Learning (91.6%) reflect a unanimous or near-unanimous endorsement of the Spelling Bee method across the experimental group. On the former indicator, all 19 students agreed or strongly agreed both that they wished to continue using Spelling Bee in future vocabulary lessons and that the method was suitable for English vocabulary learning. On the latter, all students confirmed that the game made vocabulary learning more enjoyable and more engaging than the conventional methods they had experienced previously.

Vocabulary Understanding and Mastery (88.4%) and Spelling Confidence and Ability (86.3%) both reached the Excellent threshold, indicating that students not only enjoyed the game but perceived it as having a genuine and positive effect on their vocabulary knowledge and spelling competence. Notably, 100% of students agreed or strongly agreed that the Spelling Bee helped them understand the meaning of new words, and 84.2% reported that they could spell English vocabulary more accurately following the intervention.

The Learning Challenges indicator (82.5%, Good) warrants closer attention. While the majority of students (84.2%) disagreed with the statement that Spelling Bee caused them to focus on spelling at the expense of meaning comprehension, a minority of students (15.8%) expressed some agreement with this concern. This finding suggests that, for most students, the three-variation format successfully balanced form-focused and meaning-focused practice; however, a small subset of learners experienced some tension between the game's spelling demands and their understanding of vocabulary meaning.

DISCUSSION

The findings of this study offer meaningful insight into the potential of game-based vocabulary instruction in EFL contexts where learners have limited exposure to English outside the classroom. Two principal questions guided the investigation: whether the Spelling Bee Game produced measurable gains in vocabulary mastery, and whether it fostered genuine learning interest among students.

The Effectiveness of Spelling Bee Game on Vocabulary Mastery

The vocabulary test results provide consistent evidence that the Spelling Bee intervention produced substantially greater learning gains than conventional instruction over the same period. The experimental

group's mean score increased by 32.90 points, from 46.60 to 79.50, compared to a gain of 19.25 points in the control group, and the independent sample t-test confirmed that this difference was statistically significant ($t = -5.769$, $df = 37$, Sig. = .000). The experimental group's mean N-Gain of 0.63, classified as Medium under Hake's (1998) framework, contrasts with the control group's mean of 0.37, a value that, while technically within the Medium band, sits markedly closer to the Low boundary and reflects a considerably less consistent pattern of improvement across students.

These findings align closely with the existing literature on game-based vocabulary learning. Zhang and Hasim (2023), in their systematic review of gamification in EFL and ESL instruction, identified competitive game structures with immediate feedback as among the most reliably effective formats for vocabulary gains, precisely the conditions that the Spelling Bee Game instantiates across its three variations. Similarly, Vnucko and Klimova (2023) found that game-based vocabulary approaches consistently outperformed conventional methods in both short-term acquisition and longer-term retention, attributing these advantages to the heightened engagement and reduced anxiety that game environments tend to produce. The present findings reinforce both conclusions in a context, rural West Sulawesi, where English exposure outside school is minimal that has rarely featured in the international game-based learning literature.

The three-variation design adopted in this study appears to have contributed meaningfully to the breadth of observed gains. The Classic Spelling Bee engaged individual retrieval and public production; the Team variation introduced cooperative interdependence, consistent with Bećirović et al.'s (2022) finding that cooperative structures strengthen both motivation and achievement in EFL classrooms; and the Visual Spelling Bee leveraged dual-coding mechanisms by pairing orthographic word forms with pictorial referents, a strategy that Luo (2022) has shown to produce deeper encoding and more durable retrieval. Gayathri and Vijayalakshmi (2025) similarly found that visual learning approaches generated significant vocabulary gains over conventional instruction, particularly among younger learners, a finding that resonates with the strong performance observed in the Visual Spelling Bee session of the present study. Taken together, these three formats addressed complementary dimensions of vocabulary mastery, individual recall, collaborative use, and visual-orthographic association, in a way that a single-format implementation is unlikely to have achieved. This represents a meaningful methodological advance over comparable studies, including Seregar and YB (2024), whose Spelling Bee implementation in an Indonesian senior high school context employed only the Classic format and, while producing positive outcomes, did not systematically engage the visual or cooperative dimensions of vocabulary learning.

Students' Learning Interest through the Spelling Bee Game

The questionnaire results present an equally clear picture regarding students' affective response to the intervention. The overall average of 86.2%, classified as Excellent, indicates that the experimental group responded to the Spelling Bee Game with a high and broadly consistent level of interest across all five measured indicators. The two highest-scoring indicators, Suitability and Willingness to Continue (92.1%) and Interest and Attitude toward Vocabulary Learning (91.6%), reflect not merely momentary enjoyment but a sustained positive orientation toward the method, with all 19 students expressing a desire to continue using Spelling Bee in future lessons.

These findings are consistent with Yu's (2023) observation that gamified vocabulary learning produces higher motivation scores alongside better vocabulary outcomes, and with Susaniari and Santosa's (2024) conclusion that motivation functions as a primary pathway through which game-based approaches enhance learning, motivated students engage more deeply, attempt more vocabulary, and persist longer in the face of difficulty. The social dimension of the Team Spelling Bee variation appears particularly relevant here: Zheng and Zhou (2022) demonstrated that cooperative learning environments generate not only higher achievement but greater enjoyment of the language learning process, and the strong scores on the Interest and Attitude indicator suggest that students in the present study experienced something similar. Yang et al. (2024) further note that game-based formats reduce foreign language anxiety, and the Spelling Bee's combination of structured support, peer collaboration, and competitive excitement appears to have created conditions in which students felt sufficiently safe to engage actively with target vocabulary, a meaningful outcome in a context where passive disengagement had been the prevailing pattern.

The one indicator that fell below the Excellent threshold, Learning Challenges (82.5%, Good), reveals a constructive tension within the intervention. A minority of students (15.8%) expressed some concern that the game's emphasis on spelling accuracy drew their attention away from vocabulary meaning. This finding is worth taking seriously: it resonates with broader cautions in the literature about the risk of form-focused game activities narrowing learners' attention to surface-level features at the expense of deeper semantic processing.

Future implementations of the Spelling Bee Game might address this by incorporating brief meaning-focused reflection activities between game rounds, ensuring that spelling practice and comprehension development remain mutually reinforcing rather than competing priorities.

Implications and Limitations

The findings carry practical implications for EFL teachers and curriculum designers working in under-resourced or low-exposure contexts. The Spelling Bee Game, particularly when implemented across multiple variations, offers a low-cost, infrastructure-independent instructional strategy that can meaningfully improve vocabulary outcomes and sustain student engagement without requiring digital devices or specialist materials. The positive results obtained with students from a local-language-dominant community in West Sulawesi suggest that the approach is transferable to similar settings across Indonesia and, by extension, to comparable EFL environments elsewhere (Isma et al., 2022; Rasmin et al., 2024). For curriculum developers, the study provides empirical grounds for incorporating game-based vocabulary activities into formal syllabi, rather than treating them as supplementary enrichment.

Several limitations must be acknowledged. The quasi-experimental design, while appropriate for the school-based context, does not permit strong causal claims: the absence of individual random assignment means that unmeasured differences between the two intact classes cannot be entirely ruled out as contributing factors in the observed outcome gap. The sample size of 39 students from a single school in one district of West Sulawesi constrains the generalisability of the findings, and the four-week treatment period, while sufficient to detect measurable gains, leaves open the question of whether the observed improvements would be sustained over a longer timeframe. Future research would benefit from larger and more geographically diverse samples, extended intervention periods, and mixed-methods designs that incorporate classroom observation and student interviews to provide a richer account of the learning processes underlying the quantitative outcomes reported here.

CONCLUSIONS

This study investigated the effectiveness of a multi-variation Spelling Bee Game incorporating Classic, Team, and Visual formats on the vocabulary mastery and learning interest of eighth-grade EFL students at SMPN 4 Pamboang, West Sulawesi, Indonesia. The findings indicate that the intervention produced meaningful and statistically significant gains in vocabulary mastery. The experimental group's mean score rose from 46.60 to 79.50, yielding a mean N-Gain of 0.63, considerably higher than the control group's gain of 0.37 and an independent sample t-test confirmed a significant between-group difference (Sig. = .000). Beyond test performance, students demonstrated a strongly positive interest in the approach, with an overall questionnaire average of 86.2% (Excellent), reflecting high levels of engagement, confidence, and willingness to continue using the method. These results suggest that the Spelling Bee Game, when implemented across complementary variations that address individual recall, cooperative learning, and visual-orthographic association, represents a viable and engaging alternative to conventional vocabulary instruction particularly in low-exposure EFL contexts where motivating students to engage actively with English remains a persistent challenge. Future research should extend these findings through larger samples, longer treatment periods, and mixed-methods designs to deepen understanding of the mechanisms underlying game-based vocabulary learning.

REFERENCES

Ahmed, A. A. A., Sayed, B. T., Wekke, I. S., Widodo, M., Rostikawati, D., Ali, M. H., Abdul Hussein, H. A., & Azizian, M. (2022). An empirical study on the effects of using Kahoot as a game-based learning tool on EFL learners' vocabulary recall and retention. *Education Research International*, *2022*, 1–10. https://doi.org/10.1155/2022/9739147

Amzalag, M., Kadusi, D., & Peretz, S. (2024). Enhancing academic achievement and engagement through digital game-based learning: An empirical study on middle school students. *Journal of Educational Computing Research*, *62*(5), 989–1013. https://doi.org/10.1177/07356331241236937

Bećirović, S., Dubravac, V., & Brdarević-Čeljo, A. (2022). Cooperative learning as a pathway to strengthening motivation and improving achievement in an EFL classroom. *Sage Open*, *12*(1). https://doi.org/10.1177/21582440221078016

Fahmi, A., Mukminatien, N., Ginting, D., & Kusumaningrum, S. R. (2024). The impact of flipping class intervention on reading comprehension: Different approaches and proficiency levels. *PLOS ONE*,

19(6), e0305041. https://doi.org/10.1371/journal.pone.0305041

Gayathri, A., & Vijayalakshmi, S. (2025). A visual learning approach to enhance the vocabulary acquisition of seventh grade students. *Middle School Journal*, *56*(3), 25–45. https://doi.org/10.1080/00940771.2025.2472591

Guo, Q., Jamil, H., Ismail, L., Luo, S., & Sun, Z. (2024). Effects of problem-based learning on EFL learning: A systematic review. *PLOS ONE*, *19*(12), e0307819. https://doi.org/10.1371/journal.pone.0307819

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, *66*(1), 64–74. https://doi.org/10.1119/1.18809

Isma, A., Abdullah, A., & Baharuddin, A. F. (2022). Non-English language students' perceptions in learning English through online Quizizz application. *International Seminar on Language, Education, and Culture (ISoLEC)*, 1–12.

Li, Z., & Li, J. (2022). Learner engagement in the flipped foreign language classroom: Definitions, debates, and directions of future research. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.810701

Luo, L. (2022). A study on the application of computer-aided dual-coding theory in English vocabulary teaching. *Scientific Programming*, *2022*, 1–10. https://doi.org/10.1155/2022/5951844

Rasmin, L. O., Isma, A., Putri, A. M. J., & Sardi, A. (2024). Play to learn: Exploring gamification in an English language e-learning platform. *Prosiding Seminar Nasional Keguruan dan Pendidikan*, *1*, 321–326.

Seregar, R. F., & YB, D. V. (2024). The implementation of Spelling Bee Game in vocabulary mastery at X class of MA Miftahul Ulum Bettet Pamekasan. *Didaktika: Jurnal Kependidikan*, *18*(2), 118–132. https://doi.org/10.30863/didaktika.v18i2.7130

Susaniari, N. K. A. C., & Santosa, M. H. (2024). A systematic review on the implementation of game-based learning to increase EFL students' motivation. *Journal of English Language and Education*, *9*(6), 77–87. https://doi.org/10.31004/jele.v9i6.520

Vnucko, G., & Klimova, B. (2023). Exploring the potential of digital game-based vocabulary learning: A systematic review. *Systems*, *11*(2), 57. https://doi.org/10.3390/systems11020057

Yang, Y.-F., Hsieh, W.-M., Wong, W.-K., Hong, Y.-C., & Lai, S.-C. (2024). Reducing students' foreign language anxiety to improve English vocabulary learning in an online simulation game. *Computer Assisted Language Learning*, *37*(3), 410–432. https://doi.org/10.1080/09588221.2022.2039203

Yu, Z. (2023). Learning outcomes, motivation, and satisfaction in gamified English vocabulary learning. *Sage Open*, *13*(2). https://doi.org/10.1177/21582440231158332

Zhang, S., & Hasim, Z. (2023). Gamification in EFL/ESL instruction: A systematic review of empirical research. *Frontiers in Psychology*, *13*, 1–12. https://doi.org/10.3389/fpsyg.2022.1030790

Zheng, S., & Zhou, X. (2022). Enhancing foreign language enjoyment through online cooperative learning: A longitudinal study of EFL learners. *International Journal of Environmental Research and Public Health*, *20*(1), 611. https://doi.org/10.3390/ijerph20010611